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Timing Container-Grown Poinsettias for Christmas Market in Hawaii

Richard A. Criley, Philip E. Parvin, and Fred D. Rauch

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PRODUCTION METHODS

Rooted or callused terminal cuttings of poinsettias may be planted in their sales containers during the late summer with a high probability of producing marketable, good-quality plants for the Christmas market. This practice saves more time, space, and labor than rooting hardwood cuttings early in the year and growing them for 4 to 6 extra months.

Because of local variations in temperatures and in the responses of the different available cultivars, experiments were set up in 4 locations and at warm, low-elevation and cool, mid-elevation levels, using cuttings[1] planted at weekly intervals. Warm, low-elevation sites selected on Oahu were the University of Hawaii horticultural glasshouses in the Manoa Valley, the Board of Water Supply nursery in Nuuanu Valley, and the Evergreen Nursery in Waimanalo. The cool, mid-elevation location selected was the Maui Research Center at Kula, 3200 feet above sea level. Heat was supplied to maintain a minimum nighttime temperature of 60 F.

The primary objective was to determine the best time to plant the cuttings for a high-quality Christmas crop.

At the warm, low-elevation sites on Oahu, rooted cuttings of 'Eckespoint C-1 Red' were planted into 6-inch pots using a 1:1 volcanite-wood shavings mix to which had been added 7 oz lime, 7 oz superphosphate, and 4 oz per cubic foot of Osmocote 14-14-14. These plants were intermittently misted for 5 to 7 days following planting to maintain turgidity and prevent leaf drop. Three

[1] Cuttings were donated by Paul Ecke Poinsettias, Encinitas, California, and by Mikkelsen Poinsettias, Ashtabula, Ohio.

cuttings were planted per pot for a single-stem crop and 2 per pot for a pinched crop. A pinch that removed the terminal and 2 to 3 partially expanded leaves was made 1 week after planting. Plantings were made at weekly intervals from September 9 through October 14, with 5 pots for each treatment each week. Daytime temperatures ranged into the low 90s in the glasshouses and nighttime temperatures were above 65 F until the week before Christmas.

Two sets of similarly treated pots were taken after the initial establishment period to cooperating growers[2] to observe the effects of outside and lathhouse growing conditions.

At the cool, mid-elevation location in Kula, the cultivars 'Annette Hegg' (rooted cuttings) and 'Mikkel Rochford' (callused cuttings) were planted weekly from September 3 through September 24 for 4 planting dates. The cuttings were grown in a 1:1:1 soil-peat-perlite mix with the addition of lime, superphosphate, and 4 oz Osmocote 14-14-14 per cubic foot. A single cutting was planted per 5-inch pot and, following pinching, pruned to 3, 4, or 5 breaks or allowed to develop as many breaks as it could carry. Two cuttings were planted per 6-inch pot and, after pinching, were pruned to allow 6 or 8 breaks per pot or as many as the 2 plants could carry. The pinch was usually made 10 to 14 days following potting; pruning was done 3 weeks later.

Plant height, number of breaks per pot (pinched plant), maximum and minimum bract diameters, and the approximate date of marketability were recorded at both locations.

RESULTS

The poinsettias grown in the horticulture glasshouses on Oahu matured quickly because of warm day and night temperatures. The single-stem (SS) plants matured more quickly than the pinched plants (Table 1). The earliest plantings were marketable in the third week of November, while the last pinched planting had not quite enough bract color by mid-December. The last SS planting was satisfactory for Christmas sale.

The pinched plants generally carried more breaks from the earliest plantings, but there was some variability which reflected the quality of the cuttings at different planting dates.

Inflorescence diameters were largest on the single-stem plants, with marketable plants produced even from the October 14 planting date. Inflorescence diameters were somewhat smaller on the pinched plants but acceptable even on plants from the October 6 planting date. Splitting of the inflorescence occurred on the earliest 2 planting dates.

Plants for the first 3 planting dates were too tall by commercial standards for both SS and pinched plants. The SS plants from the last 3 dates were all acceptable. The pinched plants from the September 30 planting were the best quality, with the last 2 sets a little short but still marketable.

The effects of cooler temperatures and somewhat drier conditions on the

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2 These growers included the Board of Water Supply, City and County of Honolulu, Pali Highway, Honolulu, and Evergreen Nurseries, Inc., Kakaina St., Waimanalo.

plants taken to commercial operations are evident (Table 2) when compared to the Manoa data (Table 1). Plantings through September 24 were rated acceptable, but the October plantings were short with few breaks and poor bract coloration. Unfortunately, a shipping accident affecting the September 30 planting resulted in too few plants to set out at the cooperating nurseries.

Different cultivars and different formats in timing the plants were used at the Maui Research Center. The data are reported in 4 tables, which represent the 2 cultivars and a single plant (Tables 3, 4) or 2 plants (Tables 5, 6) per pot.

The 'Annette Hegg' plants grown singly in 5-inch pots all reached a marketable stage about the same time during the first week of December (Table 3). Inflorescence size and plant height decreased with later plantings. Larger bracts were produced on plants pruned to 3 or 4 breaks than on plants on which all breaks were allowed to develop.

The 'Mikkel Rochford' plants from the last planting date were just barely of marketable quality (Table 4). Quality, as measured by inflorescence size and plant height, decreased with the later planting dates. Pruning to 3, 4, or 5 breaks maintained plant quality and hastened maturity more than leaving the plants with all the breaks which developed.

With 'Annette Hegg' plants grown 2 per 6-inch pot, greater height was recorded for earlier planting dates for pruned plants (Table 5). Inflorescence size was reduced as the number of breaks allowed to develop approached the maximum. Planting date had little effect on the time when the plants were considered marketable.

The 'Mikkel Rochford' plants from the last 2 planting dates were 2 to 3 inches shorter than those from the earlier dates (Table 6). Inflorescence size was reduced on the later plantings. Leaving all branches on the plants rather than pruning reduced height and bract diameter more with the late plantings than with the early plantings. Maturation was about 10 days later for the September 23 plantings than for the September 3 plantings.

DISCUSSION AND CONCLUSIONS

Rooted terminal cuttings of 'Eckespoint C-1' can be planted through the first week of October and still produce marketable plants for Christmas if grown at 65 F night temperatures with high fertility.

Single-stem plants stand a better chance of maturing for Christmas from a late planting than do pinched plants. In addition, SS plants will be taller and have larger inflorescence diameter than pinched plants.

Pinched plants will develop 3 to 5 breaks per cutting at warm night temperatures when planted as late as September 30. However, if the plants will be subjected to the growth-retarding effects of outdoor conditions, a mid-September planting date is probably the latest that can be safely recommended. Such a recommendation assumes optimum fertility and irrigation regimes and promptness in pinching as soon as the root system of the cutting is established.

Under the cool conditions of higher elevations where the 'Eckespoint C-1' is not adapted without extra heat, the 'Annette Hegg' and 'Mikkel Rochford' cultivars may be grown. As pinched plants, both bear more branches than needed.

Pruning out weaker breaks to allow 6 to 8 inflorescences to develop per pot of 2 plants produces a higher quality plant.

Cuttings planted as late as September 18 and pinched a week later still produced acceptable plants. Later plantings tended to be shorter with smaller bracts, although these still were acceptable commercially. Color development on these cool-finished plants was rated outstanding (Figures 1-8). Slightly smaller plants resulted from growing a single plant in a 5-inch pot than from growing 2 plants in a 6-inch pot. This is probably due to a smaller soil volume in which moisture and nutrients could be held.

Both the 'Annette Hegg' and 'Mikkel Rochford' cultivars have previously been shown to grow well with cool finishing temperatures. Under the conditions of the Maui Research Center, the 'Mikkel Rochford' matured later than 'Annette Hegg.' The overall data indicated that 'Annette Hegg' will produce larger inflorescences from a late planting than will 'Mikkel Rochford.' This comparison and that of maturation date delay must be ignored in this case because the 'Mikkel Rochford' plants were panned as callused cuttings while the 'Annette Hegg' were panned already rooted. It is likely that equivalent plants would result if started out with equal root systems.

TABLE 1. Flowering performance of 'Eckespoint C-1 Red' at Honolulu*

Planting date	Number of breaks	Plant height (in)	Inflorescence size (in) Max	Min	Avg	Marketable date
Single Stem						
9/9		35.0	18.2	16.1	17.1	11/24
9/15		32.5	18.9	16.2	17.6	11/24
9/24		34.4	18.2	15.4	16.8	12/6
9/30		20.0	12.7	8.7	10.7	12/12
10/6		19.4	14.3	11.5	12.9	12/12
10/14		18.3	12.5	9.7	11.1	12/14
Pinched						
9/9	9.4	26.1	13.5	11.6	12.4	12/4
9/15	6.0	27.2	13.4	10.7	12.0	12/6
9/24	8.6	25.4	13.7	12.1	12.9	12/12
9/30	6.7	18.3	13.2	9.8	11.5	12/12
10/6	6.8	13.2	11.8	10.7	11.3	12/14
10/14	8.6	13.0	8.6	6.8	7.7	12/19

*At 6 planting dates at the University of Hawaii glasshouses, Honolulu. Single-stem plants grown 3 per 6" pot; pinched plants grown 2 per 6" pot. Average of 5 pots.

TABLE 2. Flowering performance of 'Eckespoint C-1 Red' on Oahu*

Date potted	Plant type	Plant height (in)	Number of breaks	Avg bract diameter (in)	If marketable
Nuuanu Valley					
9/9	SS	15.0		9.2	yes
	P	14.2	4.2	8.4	yes
9/15	SS	18.4		9.7	yes
	P	16.2	4.2	9.2	yes
9/24	SS	15.8		8.8	marginal
	P	15.4	3.3	8.5	yes
10/6	SS	13.8		6.8	no
	P	9.8	2.3	5.7	no
10/14	SS	10.2		5.0	no
	P	7.0	3.7	3.8	no
Waimanalo					
9/9	SS	17.2		9.6	no
	P	13.2	4.8	8.7	no
9/15	SS	22.8		11.5	no
	P	15.4	4.9	9.2	no
9/24	SS	21.2		10.8	no
	P	16.2	4.2	10.4	no
10/6	SS	13.0		11.2	no
	P	8.2	3.0	7.5	no
10/14	SS	12.4		10.3	no
	P	7.4	3.8	6.7	no

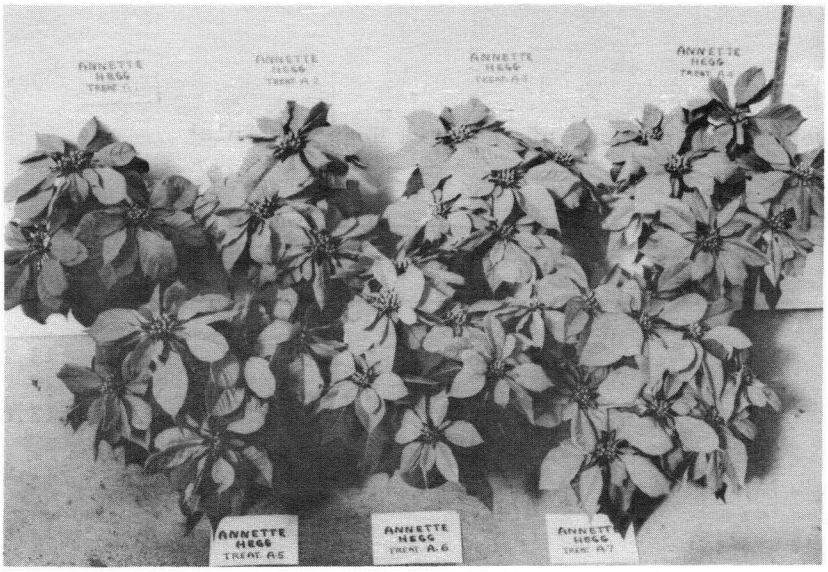
*At 5 planting dates. Plants were taken to 2 outdoor sites following establishment in the glasshouse. Single-stem plants grown 3 per 6" pot; pinched plants grown 2 per 6" pot. Averages from 5 pots. Salability as of December 14, 1971.

TABLE 3. Flowering performance of 'Annette Hegg' at Kula*

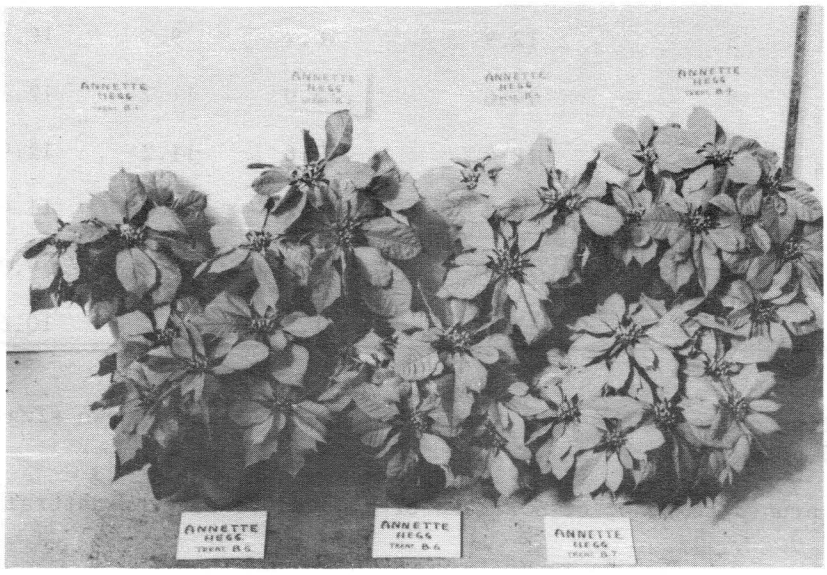
Planting date	Number of breaks**	Plant height (in)	Inflorescence size (in)			Marketable date
			Max	Min	Avg	
9/4	3	15.9	14.0	12.2	13.1	12/7
9/10	3	15.8	13.4	11.8	12.6	12/4
9/18	3	13.0	12.8	11.0	11.9	12/7
9/24	3	15.2	12.4	10.8	11.6	12/7
9/4	4	16.7	13.0	11.8	12.4	12/3
9/10	4	17.9	13.5	11.8	12.6	12/3
9/18	4	12.3	11.5	10.3	10.8	12/5
9/24	4	15.7	13.0	11.2	12.1	12/6
9/4	5	18.7	12.9	11.5	12.2	12/3
9/10	5	17.8	14.2	12.6	13.4	12/3
9/18	5	12.9	10.4	9.5	10.0	12/5
9/24	5	14.6	13.0	11.2	12.1	12/3
9/4	6.4	18.4	12.6	11.2	11.9	12/4
9/10	8.0	18.2	12.2	10.6	11.4	12/6
9/18	6.0	14.3	10.8	9.0	9.9	12/6
9/20	9.8	16.0	11.2	10.0	10.6	12/3

*From 4 planting dates at the Maui Research Center. Plants grown singly in 5" pots. Average of 5 pots.

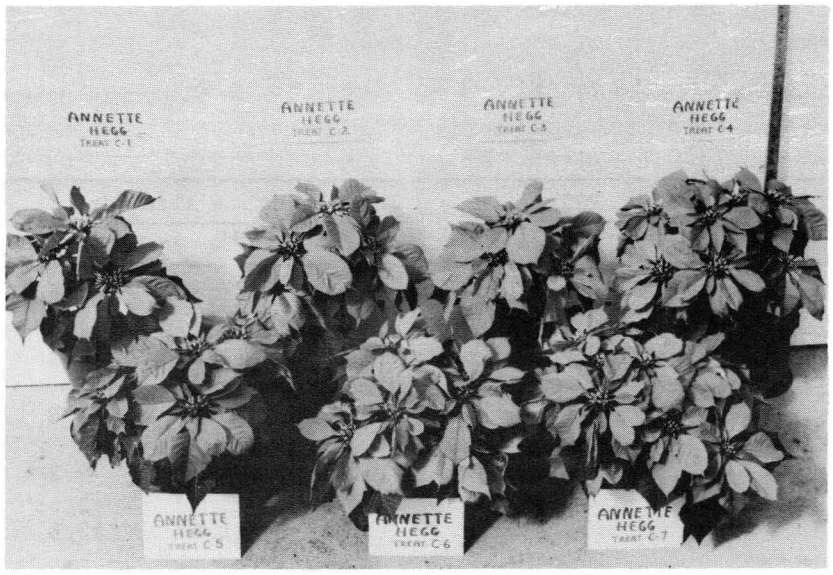
**Plants were pruned to 3, 4, or 5 breaks or allowed to develop naturally.



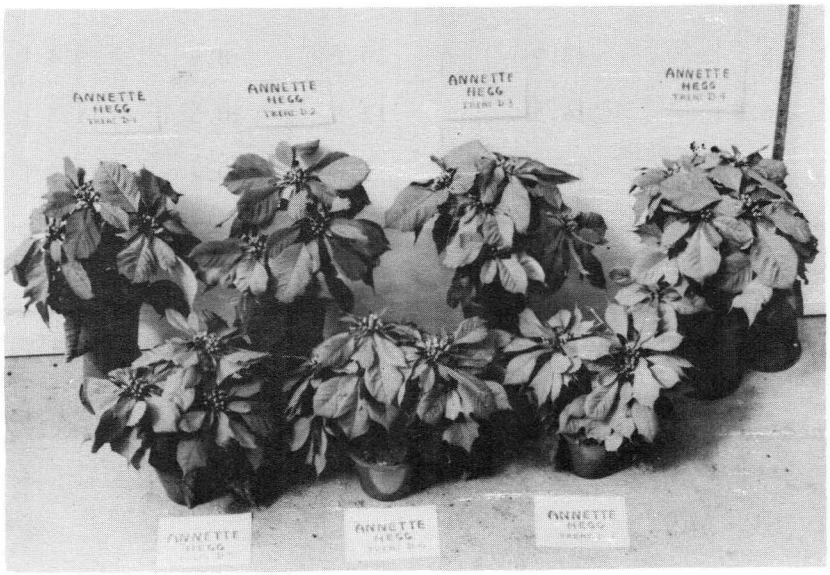
'Annette Hegg' plants from a September 4 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks (in this paper a break refers to the young shot growth that develops from the buds on the cutting); 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.



'Annette Hegg' plants from a September 10 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.



'Annette Hegg' plants from a September 18 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.



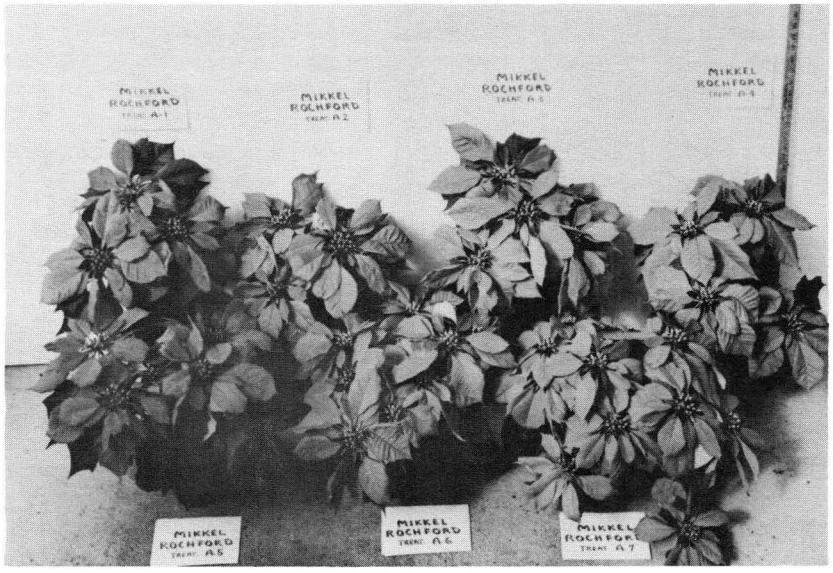
'Annette Hegg' plants from a September 24 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.

TABLE 4. Flowering performance of 'Mikkel Rochford' at Kula*

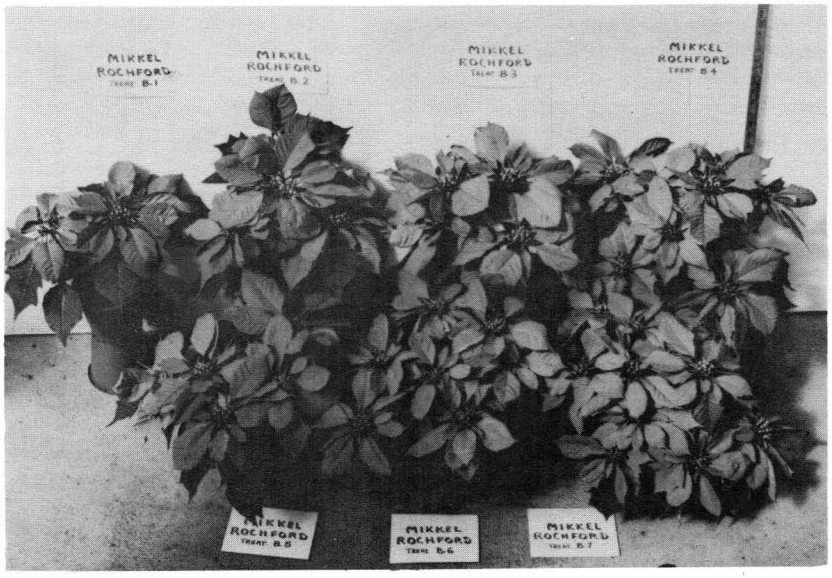
Planting date	Number of breaks**	Plant height (in)	Inflorescence size (in)			Marketable date
			Max	Min	Avg	
9/3	3	14.2	13.9	11.7	12.8	12/3
9/10	3	14.3	13.2	11.2	12.2	12/8
9/16	3	13.9	11.4	10.3	10.8	12/12
9/23	3	13.0	10.1	8.3	9.2	12/16
9/3	4	14.0	13.5	11.8	12.6	12/4
9/10	4	14.6	12.6	11.0	11.8	12/8
9/16	4	13.3	10.2	9.2	9.7	12/10
9/23	4	13.0	10.5	8.7	9.6	12/16
9/3	5	15.3	13.6	12.0	12.8	12/3
9/10	5	15.6	12.8	10.6	11.7	12/6
9/16	5	13.4	11.2	9.6	10.4	12/8
9/23	5	13.9	10.2	8.6	9.4	12/16
9/3	6.6	14.5	12.5	10.5	11.5	12/4
9/10	8.2	15.8	11.6	10.2	10.9	12/6
9/16	7.2	13.1	10.6	9.1	9.9	12/8
9/23	7.0	13.0	8.1	7.0	7.6	12/16

*From 4 planting dates at the Maui Research Center. Plants grown singly in 5" pots. Average of 5 pots.

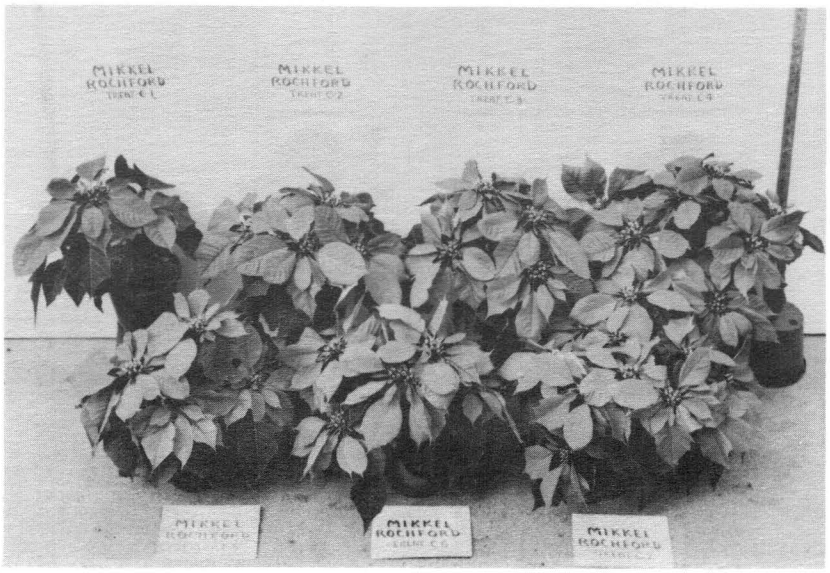
**Plants were pruned to 3, 4, or 5 breaks or allowed to develop naturally.



'Mikkel Rochford' plants from a September 3 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.



'Mikkel Rochford' plants from a September 10 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.



'Mikkel Rochford' plants from a September 16 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.

'Mikkel Rochford' plants from a September 23 planting at Kula. Treatment numbers 1 through 7 represent: 1--5" pot, pruned to 3 breaks; 2--5" pot, pruned to 4 breaks; 3--5" pot, pruned to 5 breaks; 4--5" pot, all breaks allowed to develop; 5--6" pot, pruned to 6 breaks; 6--6" pot, pruned to 8 breaks; 7--6" pot, all breaks allowed to develop.

TABLE 5. Flowering performance of 'Annette Hegg' at Kula*

Planting date	Number of breaks**	Plant height (in)	Inflorescence size (in)			Marketable date
			Max	Min	Avg	
9/4	6	20.0	12.6	11.2	11.9	12/4
9/10	6	18.5	13.2	11.8	12.5	12/4
9/18	6	14.6	11.3	9.6	10.4	12/6
9/24	6	14.8	12.2	11.2	11.7	12/3
9/4	8	20.7	12.0	10.8	11.4	12/3
9/10	8	17.6	12.3	10.9	11.6	12/4
9/18	8	13.8	10.8	9.6	10.2	12/5
9/24	8	13.3	12.4	11.2	11.8	12/3
9/4	11.8	17.9	12.2	11.1	11.6	12/3
9/10	15.8	16.5	10.6	9.1	9.8	12/3
9/18	14.2	15.4	10.6	9.1	9.8	12/7
9/24	17.4	12.9	10.8	9.4	10.1	12/3

*From 4 planting dates at the Maui Research Center. Two plants grown per 6" pot. Average of 5 pots.

**Plants were pruned to 6 or 8 breaks or allowed to develop naturally.

TABLE 6. Flowering performance of 'Mikkel Rochford' at Kula*

Planting date	Number of breaks**	Plant height (in)	Inflorescence size (in)			Marketable date
			Max	Min	Avg	
9/3	6	16.4	12.9	10.9	11.9	12/3
9/10	6	15.8	12.6	11.2	11.9	12/4
9/16	6	13.2	11.6	9.8	10.7	12/7
9/23	6	13.5	10.0	8.7	9.4	12/16
9/3	8	17.2	13.4	11.6	12.5	12/3
9/10	8	15.6	11.6	11.0	11.3	12/4
9/16	8	14.4	10.4	9.5	9.9	12/11
9/23	8	13.1	9.6	8.7	9.2	12/13
9/3	12.0	16.2	12.6	10.4	11.5	12/3
9/10	13.8	15.6	11.1	9.4	10.3	12/6
9/16	12.5	13.5	9.5	8.3	8.9	12/8
9/23	14.7	13.0	8.2	7.0	7.6	12/13

*From 4 planting dates at the Maui Research Center. Two plants grown per 6" pot. Average of 5 pots.

**Plants were pruned to 6 or 8 breaks or allowed to develop naturally.